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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,480	04/19/2001	Hiromichi Nakata	10517/94	7265

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EXAMINER
DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/837,480	NAKATA ET AL.	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *27-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I in Paper No. 5 is acknowledged. The traversal is on the ground(s) that simultaneous searching of classes 427 and 429 would not be unduly burdensome because of the asserted close relationship between the claimed process and its product. This is not found persuasive because the process claims would require a search in class 427, which is not required for the product claims.

The requirement is still deemed proper and is therefore made FINAL.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 4/19/01 and 10/30/01 have been considered by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3, 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 14 recites the phrase "the separator base material is subjected to a predetermined treatment", which is indefinite. It is unclear what "a predetermined treatment" encompasses.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

-Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4-14 and 16-26 are rejected under 35 U.S.C. 102(e)/35 U.S.C. 103(a) as being anticipated by, and alternatively unpatentable over, Yoshimura et al., US 6,291,094.

Yoshimura teaches a separator for a fuel cell and a fuel cell incorporating the separator. The gas separator of Yoshimura comprises a metal base member coated with an electrically conductive material other than carbon (first coating layer) and with a carbon material (second coating layer) so that a sufficiently high corrosion resistance can be achieved without using a costly material such as a noble metal. The separator has a carbon material coating on a contact face that contacts an adjacent member (for example, a gas diffusion electrode) when the separator is incorporated into a fuel cell. Since the adjacent member is also formed of a carbon material, the contact resistance between the carbon material coating of the separator and the adjacent member can be reduced. Thus, the provision of the first coating layer of an electrically conductive material and the second coating layer secures a sufficiently high corrosion resistance and a sufficiently high electric conductivity. See col. 2, lines 15-34. The separators have ribs that define fluid flow passages (col. 4, lines 9-23). Yoshimura teaches that a base metal separator material can be coated with tin (a base metal) and a thermal expansion graphite (carbon material) in order to secure a high corrosion resistance and reduce the production cost in comparison with a case where use of a noble metal (base metal), such as platinum rhodium or the like is used (col. 7, lines 32-55). The first coating layer is formed after a passive state coating is removed from the base member (predetermined treatment). See abstract.

Yoshimura teaches in the regions of the separators defining the gas passages (non-contact surface), the coating layer of the electrically conductive material and/or the coating layer of the carbon material may be omitted in those regions (col. 15, lines 50-65). Furthermore, since there is no need to secure an electric conductivity in the regions other than the contact faces, it becomes unnecessary to remove the passive state film from those regions of the base material of

the separator (col. 16, lines 20-35). The first coating layer may include graphite material (electrically conductive particles). If the graphite material is taken up into the first coating layer, the contact resistance between the first coating layer and the second coating layer may be decreased (col. 11, lines 3-9).

Yoshimura teaches the first coating layer comprising a metal having a low melting point (of about 500°C or lower). Example of the metals for the first coating layer include tin, indium, lead, bismuth and the like. Furthermore alloys such as Sn-Pb, Sn-Be or Sn-In may be used (col. 11, lines 53-62). Note the base may be stainless steel (abstract). Both indium and lead have a lower melting point than tin. Tin, forming the first coating layer, retains a sufficiently high electric conductivity if oxidized (col. 8, lines 10-12).

Thus the claims are anticipated.

The claims are alternatively unpatentable. Yoshimura does not explicitly state the metal coating layer is successively subjected to melting and gradual cooling. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Thus, whether a molten coating method, a physical vapor deposition method or a spray coating method is used to form the coating, the products as an end result are substantially the same. Furthermore, Yoshimura does not explicitly state the metal coating layer is formed from crystal grains having an average grain size of 0.1 mm or more. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Thus, regardless of the size of the metal grains used to form the metal coating layer, only properties of the end product (for example, the size of the metal coating layer of the fuel cell separator) are given patentable weight.

Claims 1-4, 13-16, 25 and 26 are rejected under 35 U.S.C. 102(e)/35 U.S.C. 103(a) as being anticipated by, and alternatively unpatentable over, Hwang et al., US 6,090,228.

Hwang teaches an anticorrosive treatment method for a separator of a fuel cell. Conventional anticorrosive treatment methods for the separator include a molten metal (aluminum) coating. Hwang teaches nickel (underlying coating layer) and aluminum are coated in turn on a base material of stainless steel. See abstract. The separator provides entry and exits of reaction gases (fluid flow paths) and an electric current path (col. 1, lines 37-38). The separator contacts an electrode of the fuel cell (Fig. 1). It is well known to coat the separator with aluminum by dipping a base material into molten aluminum (col. 1, lines 58-63).

Thus the claims are anticipated.

The claims are alternatively unpatentable. Hwang does not explicitly state the metal coating layer is successively subjected to melting and gradual cooling. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Thus, whether a molten coating method, a physical vapor deposition method or a spray coating method is used to form the coating, the products as an end result are substantially the same. Furthermore, Hwang does not explicitly state the metal coating layer is formed from crystal grains having an average grain size of 0.1 mm or more. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Thus, regardless of the size of the metal grains used to form the metal coating layer, only properties of the end product (for example, the size of the metal coating layer of the fuel cell separator) are given patentable weight.

Claims 1-4, 13-16, 25 and 26 are rejected under 35 U.S.C. 102(b)/35 U.S.C. 103(a) as being anticipated by, and alternatively unpatentable over, Mukohyama et al., US 5,798,188.

Mukohyama teaches a fuel cell comprised of an electrolyte membrane, gas diffusion electrodes that sandwich the membrane, and bipolar plates operating as gas separation plates and current collectors with gas passages provided by projections (Fig. 1). A bipolar plate comprises projections on the plate of a melt-processible polymer (underlying coating layer) and a coating on the surfaces of the plate comprising metal, metal nitride or metal carbide. See abstract. The metal of the metal coating layer may be Ti, Au, Nb or Cr (col. 3, lines 19-25).

Thus the claims are anticipated.

The claims are alternatively unpatentable. Mukohyama does not explicitly state the metal coating layer is successively subjected to melting and gradual cooling. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Thus, whether a molten coating method, a physical vapor deposition method or a spray coating method is used to form the coating, the products as an end result are substantially the same. Furthermore, Mukohyama does not explicitly state the metal coating layer is formed from crystal grains having an average grain size of 0.1 mm or more. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Thus, regardless of the size of the metal grains used to form the metal coating layer, only properties of the end product (for example, the size of the metal coating layer of the fuel cell separator) are given patentable weight.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

April 28, 2003

Patrick Ryan
Supervisory Patent Examiner
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